PROJECT NUMBER: 1704
PROJECT TITLE: Supercritical Fluid Processes
PROJECT LEADER: T. M. Howell
PERIOD COVERED: October, 1988

I. LOW NICOTINE

A. **Objective**: Understand solubility behavior of tobacco wax solubles in SC-CO_2.

B. **Results**: Fabrication of a unit that will permit varying pressure and volume while maintaining constant temperature is complete and testing has begun. Filler is equilibrated with SC-CO_2 at standard operating conditions. A portion of the stream is isolated in a Ruska view cell through which the beam from a helium-neon laser is passed and the light scattering is detected. The volume of the cell is expanded to reduce pressure while temperature is held constant. When the cloud point is reached the fluid becomes turbid and the degree of turbitity is measured by the detector. A pressure-temperature relation for precipitation of the solubles can then be obtained. The results using DL4 blend at 12% OV are shown below.

Temperature	CO_2:Tob	Pressure @ Prec
60	10.8:1	3150
60	22.2	3000
50	10.8:1	2900
50	22.2:1	2750

The data indicate that the soluble material is in the retrograde region and that at current operating conditions the CO_2 is not saturated with these compounds.

C. **Plans**: Continue developing this technique in order to better understand wax deposition and spotting during our current let-down procedures.

II. LOW NICOTINE

A. **Objective**: Evaluate errors associated with analysis and tobacco preparation.

B. **Results**: A study was carried out within the SCF group to check the accuracy and precision of our nicotine, AB, and OV analyses. Initial evaluation of the data uncovered some areas where improvements could be made.

C. **Plans**: Finish evaluating the data and improve where possible. Develop a maintenance program for continued minimization of errors.

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III. LOW NICOTINE

A. **Objective**: Develop safety protocol for the SCF laboratory.

B. **Results**: Installation of a gas monitoring system is near completion. Development of a documented safety protocol was initiated with an evaluation of current procedures.

C. **Plans**: Finalize and document safety protocol.

IV. LOW NICOTINE

A. **Objective**: Develop alternate on-line nicotine monitors for the ART process.

B. **Results**: A shorter path length cell has been received and pressure checked. Installation is underway.

C. **Plans**: This work is ongoing.

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Source: https://www.industrydocuments.ucsf.edu/docs/jkkm0000